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THE PROBLEM OF PERSONNEL IN
BASIC MEDICAL RESEARCH IN POLAND

In an unplanned development of science it is easy to neglect certain fields of science. Gaps arise which not only are reflected clearly in scientific activity, but, more important, decrease the scientific potential of the nation. If neglect of a scientific field takes on real significance, the country will find it necessary to import science from abroad.

Biophysics may be taken as an example of a neglected field of science. The Czechoslovak Five-Year Health Service Plan provides for the education of about 100 medical specialists in scientific research, mainly biochemistry. About thirty of these doctors will specialize in biophysics research (Zdrowie Publiczne, 1949, Nos 1 and 2).

There is no reason to regard the basic situation in medical science in Poland as being worse than that in Czechoslovakia. Nevertheless, it is still necessary to take a greater interest in those fields of science which are neglected in Poland at the moment.

The organizational groups of the Subsection on Medical Science of the First Congress were appointed primarily to discover the neglected areas. The especially important case of biophysics was considered at the meeting of the subsection, and was documented extensively by Professor Doctor Loria.

The following report will not discuss the universally known complaints of theoretical institutions, with their heavy loads of teaching and administrative work, shortage of workers, bibliographic difficulties, and space and equipment problems, or the constant loss of theorists to clinical work and actual practice, etc.

These problems have been thoroughly discussed (Zycie Nauki, 1948, No 29, 30, and 1950, No 3, 4), and are known to the ministries. A solution to these problems should be expected on a nation-wide scale from the government. To look at the problem from the viewpoint of the director of a theoretics laboratory is

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certainly inadequate. Nevertheless, improvement of conditions in this direction is necessary to ensure personnel for scientific work, and to ensure a proper development of science.

Medical science theorists have three main tasks: (1) to serve health service centers, (2) to teach, (3) to engage in creation scientific research.

In principle there should be no conflict between the program to train specialists (such as analysts, bacteriologists, and dissectors) for practice and treatment, and the research program. Therefore, if there is a distinction made in this report between the problem of training theorists for clinical work and the problem of training research theorists, it is only to make certain pedagogical distinctions, and not to recommend the separation of scientific research from practical health service.

Nevertheless, a true research scientist must undergo a period of mature adjustment in thinking, and must have a high level education, which is not needed by the worker on routine laboratory tests.

The training of hospital theorists may be done by courses, exercises, and clinical practice, during which time all the attention of the student may be concentrated on acquiring knowledge and skill. On the other hand, in training a research scientist, great emphasis is attached not only to the acquisition of knowledge, but to the deeper comprehension of this knowledge. In this case, education is not only a problem of instruction, but also a case of mental exertion on the part of the student. Besides skill in performance, a knowledge of apparatus construction is needed, as well as an understanding of the limitations in the application of various methods.

Constantly keeping in mind the principle of uniform training of personnel, a distinction should be made between specialists and research workers.

Specialists are theorists who serve hospitals, clinics, and other centers of medical service. They include analysts, serologists, bacteriologists, dissectors, legal experts, specialists on electromedical methods and on blood conservation and transfusion, endocrinologists, etc.

Researchers are theorists who perform scientific research work in the public health service, in pharmaceutical industries, and in the manufacture of serum, vaccines, and biochemicals, and who are members of scientific research institutes devoted exclusively to research work.

The personnel breakdown in the various branches of theoretical medicine is derived from the minutes of the meetings of the Subsection on Basic Medical Science of the First Congress.

The workers were divided into three categories: (1) laboratory managers, (2) independent research workers, (3) supervised research workers.

The independent research workers include docents, PhD's, or older scientific research workers with important experience. The supervised research workers consist of those workers who already have made some scientific research contribution. Laboratory assistants are not included, if they merely do laboratory work but have not made any noteworthy or original contribution.

The table given below covers only personnel in higher schools, not personnel educated outside of these higher schools, as, for instance, at the State Hygiene Research Laboratory (Panstwowy Zakład Higieny), or at the Biochemical Section of the Chemical Institute (Instytut Chemiczny). It also does not take into consideration the personnel in the biology, chemistry, and physics laboratories, on which the minutes of the First Congress give no information.

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The figures given in the table are only approximate, since uniform definitions of the categories were not agreed upon by the delegates of the subsection.

The report also does not take into consideration the factor of uncertainty caused by the flow of workers from theoretical research laboratories to medical practice. This is especially true of those laboratories which have not clearly indicated lines of useful work except teaching, as, for instance, the laboratory of descriptive anatomy.

The table does not take into consideration the scientific research personnel working outside of medical academies, dispersed in hospitals, on army duty, in the SP (Siuzba Polace, Service for Poland), etc. Data on research workers employed are gathered by the subsection for certain institutions other than medical academies; for example, the State Hygiene Research Laboratory. Likewise, data on other institutes, such as the Main Institute of Industrial Chemistry (Główny Instytut Chemii Przemysłowej) are also available. However, information on such workers as dissectors and legal experts in non-university cities is entirely lacking. The table discloses that in at least two theoretical fields, namely, legal medicine and pharmacology, there is inadequate personnel to fill the positions of department heads in each of the ten academies.

The status of personnel in many other institutions is adequate to fill the management positions, but there are almost no reserves in case of sudden needs, and there is a total lack of independent teaching and scientific research personnel to replace department heads.

The personnel available in the field of microbiology would be sufficient for both department direction and teaching. However, with respect to the especially heavy burden of practical work in this field, personnel is inadequate. About 125 bacteriologists are needed for independent work in in-patient medical services by the end of the Six-Year Plan. This is equivalent to one independent bacteriologist for every 1,000 beds, since Poland will have about 125,000 hospital beds at the end of the Six-Year Plan. Even in the field of microbiology, the personnel is inadequate, although microbiology personnel, including the huge staff of the State Hygiene Research Laboratory, amounts to 118 independent workers or workers who are ready for independent status.

An estimate of the number of specialists required in each of the ten fields listed below could be based on the assumption that one specialist would be needed in each field for every 1,000 beds (i.e., 10×125). About 500 additional specialists would be needed in all, and each field would have to turn out 50 to 60 workers during a period of 5 years. Only microbiology is capable of turning out such numbers in Poland. These numbers apply only to in-patient medical services. For out-patient medical services an additional 250 specialists will be needed.

Number of Research Personnel in Medical Academies

<u>Laboratories of Medical Academies</u>	<u>Department Heads</u>	<u>Independent Research Workers</u>	<u>Supervised Research Workers</u>	<u>Total</u>
Descriptive anatomy	9	4	3	16
Histology and embryology	9	4	14	27
Human physiology	12	1	8	21
Biochemistry	7	4	7	18
Pathological anatomy	9	2	23	34

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<u>Laboratories of Medical Academies</u>	<u>Department Heads</u>	<u>Independent Research Workers</u>	<u>Supervised Research Workers</u>	<u>Total</u>
General and experimental pathology	8	3	4	15
Pharmacology	5	2	4	11
Microbiology	8	13	24	45
Legal medicine	7	1	7	15
Hygiene (data lacking)	-	-	-	-
Total	74	34	94	202

In the period between the wars, the problem of educating specialized personnel was best solved in the field of microbiology. The organization of this science may stand even today as a model and prototype for other sciences. It was tailored to conditions in Poland.

In prewar Poland there were four bacteriological laboratories connected with medical faculties, and five laboratories of general and experimental pathology.

At present, microbiology departments have 8 professors, 13 independent research scientists, and 24 junior workers who are already productive in scientific research. This means that for each professor there are about four independent research scientists or scientists working for independent status.

The general and experimental pathology departments (including endocrinology departments) contain eight department heads, with only three workers who could be considered as independent research scientists and four who are working toward independent research. Therefore, there are seven independent research workers and junior workers for eight department heads.

The State Hygiene Research Laboratory, which is not included in the table, has a total staff of bacteriologists amounting to 118 workers, including 28 independent research workers.

The exceptional position of bacteriology among the fundamental medical sciences is attributable to the existence of the State Hygiene Research Laboratory. If bacteriology depended solely on the microbiology laboratories in medical faculties as do other sciences, its status would certainly not be any different from, for example, the status of biochemistry. The reason is to be found in better internal organization.

It can be predicted that the creation of the Chemical Institute will have a rapid and encouraging effect on the number of personnel available in biochemistry. The creation of a separate biochemistry institute would have an even more pronounced effect.

As has been mentioned before, the source of specialist personnel should be not only the university research laboratories, but all the larger centers of public health, wherever there are laboratories, contingent on adequate laboratory equipment and highly qualified workers.

This last problem may be solved by organizing continuation training institutes. Such centers exist in the USSR, and the practicing country doctor may receive periodic leaves of several months for training in various fields.

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Certainly such centers are much better than continuation courses organized in piecemeal fashion. An institute for training specialists, modeled after the institutes in the USSR, could train 50 students in a period of 6 months; this number would be sufficient to begin with.

Another means of improving the education of scientific personnel is an exchange of assistants among the laboratories, in order to give them a broader scientific background.

Publications pertinent to special problems, such as hematology and endocrinology, should be started. Such publications spur research efforts and create conditions favorable to development in specific fields of science.

Publications with concise information on the status of research in various fields, such as the Annual Review of Biochemistry, are another matter. With the growing significance of basic medical sciences, there arose a great need for investigating many branches of knowledge. Articles in scientific periodicals are of interest to all specialists. Some periodicals are often unobtainable; some are unintelligible to researchers in allied fields. Monographs help by giving the research scientist a list of professional literature, and the wide mass of readers a review of the problems. This type of Polish publication will present science according to the level of development of the scientific possibilities of Poland. The general research attitude and even research problems are necessarily different, from the Polish viewpoint, than from, for example, the US viewpoint. Poland needs to turn the spotlight on its native achievements and on the status of research in the USSR and in other neighboring countries. The reason Poland had been dependent on foreign example for scientific work for so long a time was the lack of adequate appreciation of the conditions and development of native science.

The Scientific Research Council of the State Hygiene Research Laboratory lately has undertaken the publication of the first such periodical in the history of basic medical science in Poland, under the editorship of Prof Dr L. Hirszfeld (Postępy Higieny i Medycyny Doswiadczalnej).

The work in the institutes must bring the scientific research assistant in contact with actual scientific problems as defined and solved with his cooperation, to the extent permitted by available laboratory equipment. The institutes may accept only those junior research scientists who already possess some theoretical and practical knowledge from relatively smaller scientific research laboratories, such as those in university departments.

To date, in the field of basic medical sciences, Poland does not have a single laboratory devoted exclusively to scientific research work. Without exception, scientific research workers have numerous duties which keep them from concentrating on their work. The majority of Polish researchers owe their scientific experience to self-education or to occasional trips abroad. The need for high level educational centers in Poland has been recognized by all, but has been hampered by the shortage of personnel. By the end of the Six-Year Plan, the research institutes will unquestionably become a reality.

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